EBRUARY/MARCH, 1961

THE AIR LINE PILOT

this issue

- ALPA's statement on air safety
- The danger of bird strikes
- Pilot training program

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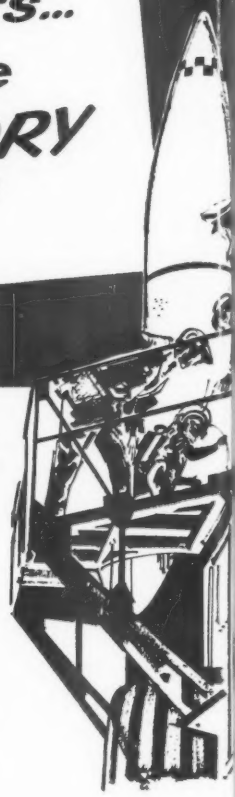

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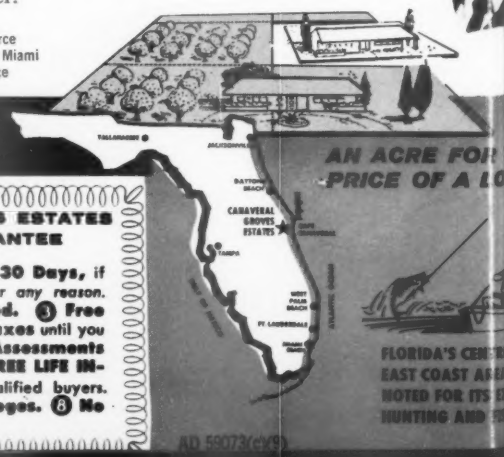

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THE AIR LINE PILOT

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On The Cover

Photograph courtesy Northeast Airlines

Northeast Airlines' Convair 880 climbing above the weather. The 880 has a level cruise speed of 615 mph at 22,000 feet. On a four hour and ten minute delivery flight from San Diego, California, to Boston, a Northeast 880 broke the existing unofficial speed record. At one point a ground speed of 790 mph was reached, and the last portion of the flight—between Albany and Boston—was covered in only 12 minutes.

Special Report:

ALPA's statement on air safety before Senate Aviation Subcommittee

ALPA's president, C. N. Sayen, told the Senate group on February 27, 1961, that the 1960 air safety record was not good and submitted seven recommendations which pilots believe are essential to improve this record.

WE are here representing the Air Line Pilots Association, International. We previously appeared before this Committee on January 18, and June 6, 1960. During these appearances, we discussed various aspects of air safety generally, and are pleased to have this opportunity to bring our statements up to date and comment further on the current problems with which the Committee is concerned in the aviation industry.

No one has a keener interest in safety matters than do the individuals who operate our air transport aircraft. Further, we recognize the fact that the aviation industry is unique in that it is almost completely dependent upon the federal and municipal governments to provide facilities for the operation of these aircraft. Consequently, we feel that substantial contributions to aviation safety can result from Congressional interest and we, of course, feel that we have a definite responsibility to bring such matters to the attention of the government in order that we may perform our job with the degree of safety expected of us.

To give the Committee members some idea of the background from which our opinions emanate, we have attached to this statement a brief description of my qualifications and of the Air Line Pilots Association's organization for safety.

Problem areas

During our previous appearances before this Committee, we have dealt at length with the air safety record then current, and pointed out problems related to air traffic control, training requirements, rule making and enforcement procedures under the present Federal Aviation Act, the inadequacy of navigational aids, and the dire need for improvement of our terminal area facilities and airports. Since those previous appearances, we have continued to give serious study to the problem areas outlined and can find nothing in the record to indicate a change in opinions previously outlined. Consequently rather than repeat ourselves, we urge that this Committee again review our position as given twice previously. We are attaching a copy of our statement of June 6, to which we will refer later in this discussion.

Basically our problem is to move aircraft safely and efficiently from the ramp of a departure airport to the ramp of the destination airport. Most of the facilities necessary to such movement are the responsibility of the federal government, either directly or by regulation. We have previously stressed air traffic control and navigational problems to you. There is not much logic, however, in building an efficient air traffic system between two airports and leaving a bottleneck at both ends. Consequently, along with the urgent airways problem, we will emphasize today the great need for assistance in providing adequate airport and terminal area facilities.

The safety record during 1960

The Committee has available to it from other sources the statistical record on air safety during 1960. We will summarize our views of it very briefly. As in 1959, the record for 1960 is still not good. For assistance to the Committee, we are attaching as Appendix "A" and "B" a list of condensed information with respect to our findings.

The Association's records show 17 fatal accidents during the calendar year 1960 in which 429 passengers, 57 crew members, and 13 others were killed. These fatal accidents may be categorized as follows:

4—During take-off and climb-out (bird ingestion, mechanical, weather).

7—En route (cabin explosion, structural failure, weather, mechanical, en route terrain).

6—Approach to airport (mid-air collision, mechanical, undetermined).

We have included in our table a brief summary of our opinion of the problems involved in each accident.

U.P.I. Photograph

TERMINAL AREA SAFETY PROBLEMS were dramatized by the tragic UAL-TWA mid-air collision over New York City last December, 1960.

These opinions do not indicate in all cases the direct or most probable cause of the accident, but do cite factors which we believe established the accident potential and where relevant, indicate safety measures which we believe could have provided the additional margin of safety that might have prevented the accident or reduced its severity.

In Appendix "A" we list 28 accidents which occurred in the terminal area* in Appendix "B," seven which occurred while en route. Since we are primarily concerned at this point with terminal area problems, where 80 per cent of our accidents occur, we will first direct our remarks to this phase of the air safety problem.

In analyzing these terminal area accidents, it appears they fall generally into certain categories, based on the common cause which applies to each type, as follows:

1. **Collision Accidents**—Five mid-air collisions occurred during approach to airfields, illustrating the hazard present in this phase of aircraft operations. They are listed in Appendix "A" and are dated: April 20, 1960, October 1 and 4, 1960, November 17, 1960, and December 16, 1960. One, the DC-8/Constellation collision over New York, occurred under instrument conditions. The other four occurred between air carriers and light aircraft in landing patterns under condition of good visibility. Three resulted in the loss of all occupants of the light aircraft and could have resulted in fatalities to those aboard the airliner. Twenty percent of terminal area accidents fall in this category.

The increasing performance of present-day aircraft combined with the increased amount of traffic and saturation of airspace demand improved means of positive traffic separation under all conditions especially in terminal areas. We must find means to implement the criteria of "see and be seen" during visual flight and bring the state of traffic control during visual and instrument flight up to the state of aircraft development.

2. **Overrun and Underrun Areas, Runway Length**—As in past years, another major factor in the accident record during 1960 was the lack of suitable overrun and underrun areas. This condition resulted in four accidents involving major damage to aircraft, and in one case fatalities were averted by

*(We consider all accidents occurring while under departure or approach control to be in the terminal area.)

ACCIDENTS (1960) FATAL AND NON-FATAL

Terminal Area Accidents*

Appendix "A"

Date	Carrier	Equipment	Location	No. of Fatalities Crew	Passenger	Other	Total	Summary
Feb. 4	TWA	707	St. Louis, Mo.	..	...	..	...	Aircraft ran off end of runway due to surface condition of runway. Insufficient runway length and overrun for adequate safety margin in wet conditions. Substantial damage.
Feb. 6	DAL	C-46R	Chicago, Ill.	..	...	..	...	Aircraft unable to stop on runway length due to poor braking action. Insufficient runway length and overrun for adequate safety margin. Substantial damage.
Feb. 20	AAL	Electra	St. Louis, Mo.	..	...	..	...	Hit snow bank on take-off. From Chicago. Inadequate snow removal. Substantial damage.
Feb. 22	ALA	DC-6	Elmendorf AFB	..	...	..	...	During a precision ground controlled radar approach under minimum conditions aircraft struck ground 1200 ft. short of the runway. Inadequate approach lighting. Substantial damage.
Feb. 25	DAL	CV-440	Chicago, Ill.	..	...	..	...	Aircraft landed hard after striking 18-24 inch ridge of ice prior to touchdown Inadequate snow removal. Substantial damage.
Feb. 26	AAA	202	Erie, Pa.	..	...	..	...	Left runway on take-off at night with poor visibility due to blowing snow. Nose gear collapsed. Improved runway marking and compact surfaces adjacent to the runway could have prevented this accident. Substantial damage.
Feb. 28	TWA	404	Olathe, Kan.	..	...	..	...	During take-off from Chicago the two left wheels parted from the aircraft. Aircraft was diverted to NAS Olathe, Kansas, where a gear-up landing was accomplished. The gear could have been weakened by rough taxiways and snow drifts. Substantial damage.
Mar. 8	EAL	Electra	St. Louis, Mo.	..	...	..	...	Aircraft struck snowbank on rollout. Runway lights were obstructed by snow banks so that they were not visible to the pilot after touchdown. Improved runway marking (center line lights), snow removal would have prevented this accident. Substantial damage.
Mar. 24	AAL	DC-6	Syracuse, N. Y.	..	...	..	...	During landing roll-out aircraft started drifting to the left and would not respond to correct action and departed runway. Runway covered with snow and there was an existing strong crosswind. Improved weather and runway condition reporting, runway marking and compact surfaces adjacent to runway would have prevented this accident. Substantial damage.
Apr. 20	PAI	F-27 Cessna	Hickory, N. C.	..	...	4	4	Mid-air collision with Cessna on final approach for landing. Inadequate traffic control facilities. Substantial damage.
May 9	TWA	707	Idlewild	..	...	..	...	Aircraft settled on runway with gear retracted on an attempted go-around from an instrument approach. ILS glide slope inoperative, inadequate approach aids. Substantial damage.
May 23	DAL	CV-880	Atlanta, Ga.	4	...	..	4	Aircraft took off on a scheduled training flight. Immediately after lift-off the aircraft was observed to assume an exceedingly nose high altitude, made left bank, veered to the left side of runway, then banked right approximately 90 degrees and struck the ground. Aircraft was totally destroyed by impact and fire. No survivors. A cockpit sound recorded could have provided valuable information.
June 14	UAL	DC-8	Chicago, Ill.	..	...	..	...	After touchdown and upon the application of reverse thrust, the airplane veered to the left. Aircraft came to rest with the nose collapsed and main gear in the mud. Compact surface adjacent to runway could have prevented this accident. Substantial damage.
June 20	TWA	707	Idlewild	..	...	..	...	Aircraft struck one-half inch cable on approach to airport. These cables were strung across the approach path from tower 70 ft in height approximately one-half mile from the runway. Flight diverted and landed with minor damage.
July 22	TTA	DC-3	Houston, Tex.	1	...	..	1	Ground collision on ramp with another aircraft. Brake failure. Mechanical. Substantial damage.
July 28	AAA	Convair	Wilkes Barre	..	...	..	...	On an attempted go-around, after power was applied and gear retracted, aircraft settled to the runway on the fuselage. Training accident. Substantial damage.
Sept. 14	AAL	Electra	La Guardia New York, N.Y.	..	...	..	...	Aircraft struck a 12-13 foot dike, 161 feet short of the runway threshold and came to rest inverted with the nose pointed in the opposite direction. Improved approach clearance and runway length would have prevented this accident. Aircraft destroyed.
Sept. 18	(World Airways)	DC-6	Guam	7	73	..	80	Aircraft crashed on take-off.
Oct. 1	EAL	M-404 & Beechcraft	Orlando, Fla.	..	...	1	1	Mid-air collision with Beechcraft just prior to turning base leg for landing approach. Normal landing completed. Beechcraft crashed. The control tower did not have the Beechcraft in visual contact. Surveillance radar could have aided in the prevention of this accident. Substantial damage to air carrier. Beechcraft destroyed
Oct. 4	CPT	C-46 Cessna	Sacramento, Calif.	..	...	2	2	Mid-air collision while on final approach for landing. The C-46 completed a normal landing. Surveillance radar could have aided in the prevention of this accident. Minor damage to air carrier. Cessna destroyed.

ACCIDENTS (1960) FATAL AND NON-FATAL

Oct. 4	EAL	Electra	Boston, Mass.	3	59	..	62	Take-off and climb to approximately 200 feet and commenced a left turn. The aircraft then nosed down and struck the water. Bird remains were found in all engines and a great number of dead birds were found on the runway after take-off. Development of a method to eliminate concentration of birds on airports. Aircraft destroyed.
Oct. 7	AAA	DC-6	Newark, N. J.	..	...	..	...	Nose gear failed during landing roll-out. Substantial damage.
Oct. 15	CPT	C-46	Near Ogden Utah	2	...	..	2	Aircraft failed structurally while making a GCA approach under turbulent VFR conditions. Cockpit sound recorder may have provided valuable information. Aircraft destroyed.
Oct. 25	AAL	707	Carswell AFB	..	...	..	...	Unable to extend nose gear. Landed with landing gear retracted. Minor damage.
Oct. 29	Arctic Pacific	C-46	Toledo, Ohio	2	20	..	22	Crashed on take-off. Aircraft destroyed.
Nov. 17	UAL	DC-6 Beechcraft	Denver, Colo.	..	...	..	...	Mid-air collision with Beechcraft while on final approach for landing. Both aircraft landed safely. Surveillance radar for traffic control would have aided in preventing this accident. Minor damage.
Nov. 18	EAL	DC-8	Boston, Mass.	..	...	..	...	Collision with birds during take-off. Aircraft braked to a stop on runway. Bird damage to engines and leading edge. This could have been very serious. Development of a method to eliminate the concentration of birds at airports and further "birdproofing" of aircraft and engines are needed.
Dec. 16	UAL TWA	DC-8 Constellation	New York	12	116	6	134	Mid-air collision during instrument weather. Improved air traffic control procedures are necessary. Aircraft destroyed.
			Total	31	268	13	312	

*Aircraft operating under departure or approach control are considered to be in the Terminal Area.

a narrow margin. In other years, we have not been so fortunate in limiting accidents in this category to aircraft and ground damage. Appendix "A" lists four accidents in this category dated: February 4, 1960; February 6, 1960; February 25, 1960, and September 14, 1960. Fifteen per cent of the terminal area accidents were in this category.

The Association has advocated overrun and underrun areas 1/10 the length of the runway as a safety factor to prevent accidents from such occurrences. The operational history of all aircraft has, for years, demonstrated that overrun-underrun areas are vitally needed to cope with weather conditions, mechanical failure of the aircraft during take-off or landing, and other factors not included in computations for runway lengths for normal operation of aircraft.

3. **Runway Width**—The accident survey illustrates that runway widths are marginal under adverse operating conditions at our airports. This has been reflected in the 1960 safety record by two accidents listed in Appendix "A" and dated March 24, 1960, and June 14, 1960.

Compacting one-third of the width on either side of the runway offers the necessary safety precaution that is needed. In the June 14, 1960, accident a DC-8, due to unsymmetrical reverse thrust, veered off the runway and received nose wheel damage. The instrument runway was closed for 17 hours during instrument weather conditions. Hundreds of passengers were inconvenienced, the air carriers lost money, and a $6 million airplane was damaged and laid up for repair for several weeks. This costly and hazardous minor accident was caused by soft soil and mud adjacent to the runway.

On February 7, 1961, a similar incident occurred at Dallas, Texas. This time, the airport was closed for 52 hours to jet operations since only one runway is suitable for use by large jet airplanes. These accidents will continue to occur unless the sides of our runways are compacted similar to the shoulders of our highways. We have recognized this danger in our highway system and should recognize it on our airports.

4. **Snow Removal**—Runway surface condition can, as in highway surfaces, be very hazardous if not properly treated. Snow and slush have accounted for a substantial percentage of our major and minor damage accidents. Fortunately, there have not been a large number of fatalities connected with these accidents; however, they are potentially hazardous. Five accidents in 1960, of which we have record, involved snow removal and are listed in Appendix "A" and are dated: February 20, 1960; February 25, 1960; February 28, 1960; March 8, 1960, and March 24, 1960.

5. **Bird Collision Problem**—There have been numerous incidents over the years of birds colliding with aircraft. The seriousness of this condition was emphasized by a fatal accident in 1960 which may have been caused by birds. The accidents we have recorded in Appendix "A" involving bird incidents are dated as follows: October 4, 1960 and November 18, 1960.

U.P.I. Photograph

***LACK OF AN ADEQUATE OVERRUN** and a too solid blast fence turned what might have been a minor accident into the loss of the flight deck crew and complete destruction of this Mexican DC-8 at Idlewild.*

APPENDIX "B"

ENROUTE ACCIDENTS (1960) FATAL AND NON-FATAL

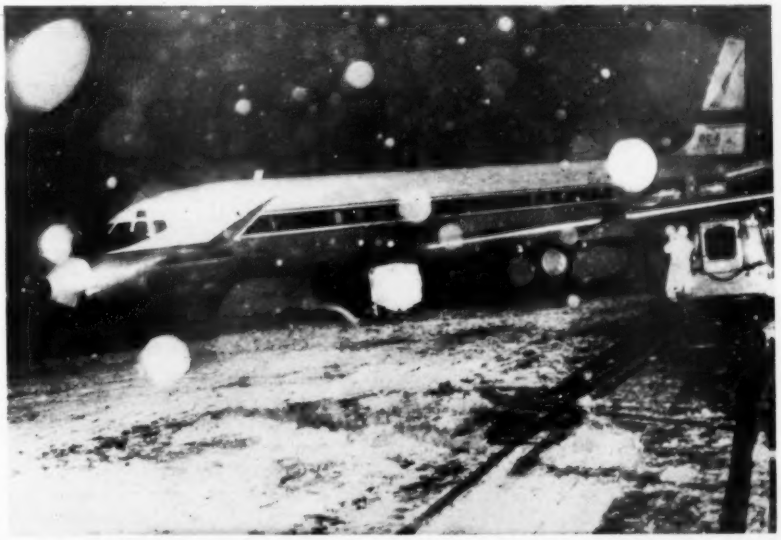
Number of Fatalities

Date	Carrier	Equipment	Location	Crew	Passengers	Other	Total	Summary
Jan. 6	NAL	DC-6B	Bolivia, N. C.	5	29	....	34	Dynamite explosion occurred within the passenger cabin causing inflight structural failure with resultant inflight disintegration.
Jan. 18	CAP	Viscount	Holdcroft, Va.	4	46	..	50	Aircraft crashed enroute at night. Witnesses in vicinity of crash site heard aircraft circle low 2 or 3 times just prior to crash. Rain and fog were present at the time of the crash. Cockpit sound recorder may have provided valuable information.
March 17	NWA	Electra	Tell City, Ind. (Cannelton, Ind.)	6	57	....	63	Aircraft broke up in flight at 18,000 ft. (Structural failure). Cockpit sound recorder may have provided valuable information.
June 14	PNA	L-749	Between Cordova and Anchorage, Alaska	5	9	....	14	Aircraft struck mountain, elevation 9,600' 26 N.M. to the right of course approximately 23 minutes after takeoff. Although flight was radar tracked by an Air Force radar site no attempt was made to contact the aircraft. Possibly inadequate instrument power failure warning. Cockpit sound recorder might have provided valuable information.
July 14	NWA	DC-7	Jomalig Island (Near Manila)	...	1	....	1	Propeller departed the aircraft making two holes in the fuselage and an uncontrollable magnesium fire developed. Ditching was accomplished approximately 10 minutes later. 57 survivors and one fatality were picked up approximately 3 hours and 30 minutes after ditching. Mechanical.
July 27	CHA	S-58	Chicago, Ill.	2	11	....	13	Aircraft broke up in the air. Structural failure. Aircraft crashed in mountainous terrain. Prelimi-
Oct. 28	NWA	DC-4	22 Miles N.W. of Missoula, Mont.	4	8	...	12	nary indications are that the aircraft structure was intact at the time of ground contact and that the engines were capable of developing power. No further details. Cockpit sound recorder may have provided valuable information.
			Total	26	161	...	187	

Evidence has shown that birds ingested into an engine may cause it to fail. Some means must be found to keep birds away from the take-off area at airports but a more foolproof solution is research and development to increase the tolerance of engines and airframes to bird strikes and ingestion.

In addition to the bird strikes involving engine damage, there have been incidents involving birds crashing through windshields and, in some cases, incapacitating the pilots. On October 1, 1960, a North Central Airlines DC-3 hit a flock of geese near Muskegon, Michigan, with resultant severe damage to the nose of the aircraft. Other similar bird strike incidents have resulted in serious damage to the eyes and faces of the crew to the point of incapacitation. It is possible that in the future an aircraft will be lost if stronger windshield protection is not provided. Presently, DC-3's and C-46's are flying without birdproof windshields. Available birdproof windshield glass

U.P.I. Photograph



***INADEQUATE RUNWAY WIDTH** and soft soil adjacent to landing strip turned a skid into a minor but costly accident.*

BIRD COLLISION PROBLEM is demonstrated by damage to this DC-3 which struck a flight of Canadian geese. The copilot was injured when his windshield was shattered from the impact.

would minimize this hazard but some air carriers have not chosen to provide this protection for the passengers and crew.

6. **Lack of Landing Aids**—We continue to have accidents due to lack of proper approach and landing facilities. Landings short of the runway would have probably been prevented by more adequate approach lighting. At least in one case this year an approach to the runway would have been closer to the runway threshold and an accident prevented if an ILS glide path had been available. The accidents in Appendix "A" dated February 22, 1960 and May 9, 1960, show the need for these facilities to improve safety.

In our opinion, no single category of preventible accidents has caused so much loss of life, injury, delay and substandard air service, destroyed and damaged aircraft, and adversely affected the growth of the aviation industry than the **continued lack of known and obtainable landing aids and airport safety standards.**

We bring to your attention the fact that at 569 airports into which air line service has been certificated for the fiscal year 1961, only 249 instrument landing systems and 174 approach light systems have been authorized. Future planning indicates that by 1963 we can expect only 265 instrument landing systems. This represents less than one-half of our domestic airports served by air carriers. Most airports having ILS and approach lights will only have them in one direction on one runway.

7. **Unrealistic Training**—Each year accidents occur during pilot training for emergency procedures. This is particularly true when new models of aircraft are being introduced into service. The Association has been very active in efforts to assure adequate pilot training programs and substantial improvements have been made. This training should be re-evaluated since it is strongly indicated that the benefits of training for these emergency conditions can be obtained when conducted at higher, safe altitudes or in a flight simulator.

In 1960, we had several "close calls" and one accident which occurred on May 23, 1960, was attributable, we think, to this practice.

8. **Mechanical and Structural Failure**—There were four accidents that involved mechanical failures of various parts of the aircraft last year.

Accidents in this category are listed in Appendix "A" on the following dates: July 22, 1960; October 7, 1960; October 15, 1960, and October 25, 1960.

In addition to fail-safe design, accidents of this type are minimized by maintenance of a well-organized inspection department. Most carriers do maintain excellent inspection and maintenance departments; however, a review of the mechanical failures, all very potentially hazardous, that occur in flight or are detected on the ground illustrate that this is an area which should receive attention. We believe the inspection function should be entirely separate from the maintenance department and urge that the Federal Aviation Agency establish this procedure.

Airport and terminal requirements

We think that the Committee will recognize the fact that while those accidents which result in fatalities are more spectacular, we must consider the non-fatal accidents in order to eliminate the possibility of future fatalities and destruction of property. Consequently, the foregoing summary lists non-fatal accidents as in indication of the corrective action which must be taken. As application of this principle to the airport problem, let us consider the phase of accidents related only to the runway lengths.

As in past years, inadequate runway lengths and unsuitable overrun and underrun areas resulted in four accidents involving major damage to aircraft with an extremely hazardous exposure to the occupants of the aircraft. These accidents were reviewed in the foregoing 1960 accident survey. A solution to this problem resides in providing adequate runway lengths together with compacted surfaces on each end of the runway to compensate for the adverse runway conditions frequently encountered. The problem is illustrated by the recent jet aircraft accident at Idlewild on January 19. This accident to the jet aircraft of a foreign air line resulted in the loss of four lives and the destruction of an expensive aircraft, together with attendant criticism and publicity adverse to the industry. The aircraft came to rest only 630 feet beyond the end of a runway. An adequate overrun area would have allowed this accident to remain a harmless incident.

In a like manner, there were two accidents of serious potential as a result of insufficient compacted surface at the side of our runways. The solution to this type problem can be stated quite simply—we need more money in order to provide adequate landing surfaces. While we are not unmindful of the fact that federal participation in this area is on a matching funds basis we do view the federal effort to this date as completely inadequate to catch up or keep pace with the rapid growth of our commercial aviation.

The foregoing illustrates the terminal facilities problem which we have indicated in our view is one of the most critical problems in aviation today. Coupled with this are, of course, the means of navigation, communication, traffic separation, visual aids, turn-off areas, taxiways, and other facilities by which the pilot takes his air-

craft from the en route system, makes an approach to the airport, lands and guides his aircraft safely to the ramp.

We discussed these matters in more detail during our appearance of January 18, 1960, and suggest that the Committee review our testimony at that time rather than to burden you with repetition.

In our view, the solution to these problems has been available for some time and consist chiefly of application of present criteria and components as rapidly as possible. We have previously called to your attention the fact that this problem was adequately reviewed as far back as 1952 by a commission created by the President of the United States, known as the President's Airport Commission, and the report made at that time contained recommendations for improvement of existing airports and criteria for future construction of airports which would have ameliorated our present difficulties had the Congress and responsible federal and municipal agencies taken action on them. While we have previously discussed some of the Commission's suggestions with this Committee, their recommendations are applicable today as they were in 1952 and, in our opinion, warrant review by the Committee. Our specific recommendations are contained in pages 11 through 13 of the testimony we delivered on January 18, 1960, before this Committee.

We strongly urge that this Congress take immediate action to see that these important recommendations are followed:

Air Line Pilots Association's Airport Survey

We realize that to outline a problem does not necessarily provide an appropriate answer; consequently, in an effort to establish our requirements in concrete terms, the Air Line Pilots Association inaugurated a program in 1959 to survey the 569 airports in the United States into which air line service had been certificated by the Civil Aeronautics Board. It was felt that proper determination of the areas of greatest deficiency would allow us to make recommendations in terms of dollars which might aid the Committee in their deliberations. The objectives of the survey were to:

1. Determine where airport inadequacies exist;
2. Determine what can be done to correct the deficiency;
3. Assist the local airport management to incorporate desirable features into the airport improvement schedule.

APPENDIX "C"

ALPA'S AIRPORT SURVEY RESULTS
257 AIRPORTS AS OF JANUARY, 1961

RUNWAY CONDITION
- Good 56%
- Fair 33%
- Deficient 11%

TAXIWAY CONDITION
- Good 53%
- Marginal 35%
- Deficient 12%

LOADING RAMP CONDITION
- Good 64%
- Fair 30%
- Deficient 6%

APPROACH LIGHTING INSTALLED
- Configuration "A" and Others 30%
- Strobe Beacons 11%

RUNWAY IDENTIFIER LIGHTS INSTALLED 2%

RUNWAY LIGHTS INSTALLED
- High Intensity 38%
- Medium Intensity 44%
- Low Intensity 18%

RUNWAY MARKING INSTALLED
- Good 20%
- Marginal 38%
- None 42%

RUNWAY LENGTH AVAILABLE
- Adequate 21%
- Marginal 75%
- Deficient 4%

TAXIWAY LIGHTING & MARKING
- Good 13%
- Marginal 36%
- Deficient 51%

RAMP LIGHTING & MARKING AVAILABLE
- Good 20%
- Marginal 57%
- Deficient 23%

OBSTRUCTION LIGHTING & MARKING AVAILABLE
- Good 24%
- Fair 66%
- Deficient 10%

RUNWAY OVERRUN AVAILABLE
- Good 16%
- Fair 24%
- None 60%

TERMINAL FACILITIES LACKING
- No Towers 58%
- No Weather Facilities 15%
- Marginal Snow Removal Procedures 50%
- Marginal Fire and Rescue Facilities 92%
- Marginal Vehicular Procedures 80%
- No Runway Visual Range Procedures 96%
- Insufficient Obstruction Lighting & Marking 76%
- Marginal Communication Procedures 58%

AIRPORTS HAVING TAXIWAYS WHICH:
- Are Too Narrow or Need Repair 47%
- Are Not Properly Lighted or Marked 51%

AVAILABLE FIRE & RESCUE FACILITIES
- Good Protection 8%
- Some Protection 35%
- No Protection 57%

SNOW REMOVAL AVAILABLE
- Good + Not Applicable 10%
- Marginal 35%
- Deficient 15%

VEHICULAR PROCEDURES IN USE
- Good 20%
- Fair 69%
- Deficient 11%

INSTRUMENT LANDING FACILITIES AVAILABLE
- ILS 33%
- VOR 53%
- Beacons Only 33%

TOWER FACILITIES AVAILABLE COMMISSIONED 42%

COMMUNICATIONS PROCEDURES AVAILABLE
- Good 42%
- Fair 42%
- Deficient 16%

WEATHER FACILITIES AVAILABLE
- Good 34%
- Marginal 51%
- Deficient 15%

SURVEILLANCE RADAR AVAILABLE
- Now 14%
- Planned 3%
- None 86%

HIGH SPEED TURNOFFS AVAILABLE
- Now 3%
- Planned 6%
- None 97%

RUNWAY DISTANCE MARKERS AVAILABLE
- Now 13%
- Planned 1%
- None 87%

RUNWAY VISUAL RANGE AVAILABLE
- Now 4%
- Planned 8%
- None 96%

NAVIGATION FACILITIES INSTALLED AT TERMINAL AREAS:
- "H" Beacons (Only) 33%
- VOR Facilities 53%
- ILS Facilities 33%
- Surveillance Radar 14%

AIRPORTS HAVING RUNWAYS WHICH:
- Should Be Lengthened 79%
- Are Deficient (Need Repair, Ect.) 11%
- Have Very Inadquate Overrun Areas 60%
- Do Not Have "Hi" Intensity Lighting 62%
- Do Not Have Marking 42%
- Do Not Have Approach Lighting 70%
- Do Not Have Runway Identifier Lights 98%
- Do Not Have Runway Distance Marking 87%
- Do Not Have High Speed Turnoffs 97%

AIRPORTS HAVING LOADING RAMPS WHICH:
- Are Too Small or Need Repair 36%
- Are Inadequately Lighted or Marked 23%

U.P.I. Photograph

TERMINAL SAFETY requires the adequate and efficient fire-fighting equipment. Here a locked brake caused a fire on landing but prompt measures brought a potentially destructive fire under control.

Generally speaking, our data was collected by our ALPA Safety Representatives in the field with the cooperation of the airport manager involved. Our initial surveys have been followed by efforts to maintain liaison with the proper officials and expedite installation of improved airport facilities. We have thus been able to establish communication to the point where we receive constant requests for information from various airport managers for the Association's views on terminal facility requirements. In practically all instances, we have received the utmost cooperation. Our conclusion, however, has been that financial requirements are the major stumbling block to improvement.

Although our airport survey is not yet complete, the information currently available provides an important yardstick on the degree of deficiency of airport development on a nation-wide basis and the extent of remedial action required to improve our terminal facilities to the desired standard.

We have attached for the Committee's information, as Appendix "C," a copy of the statistics currently available. These statistics are based on reports from 257 airport survey forms, tabulated and analyzed as of January 1, 1961. It is interesting to note that our findings are somewhat congruent with a report recently issued by the Airport Managers Council, the American Association of Airport Executives and the National Association of State Aviation Officials. That report indicated that almost one-half of our publicly owned airports in the United States needed immediate improvement and expansion. Their cost estimate was $1 billion, $100 million over the next four years. Under our matching funds formula, it would be necessary that one-half this amount be appropriated by the federal government.

The Air Line Pilots Association's study, which did not include needed new airport development, indicates that an amount of money approximating $100 million must be appropriated by the federal government each year for the next five-year period in order to provide adequate airport facilities for our present aircraft.

Let us contrast this requirement with an existing situation. The federal aviation budget for 1962 proposes $40 million for all United States airports. The budget is already exceeded by the Port of New York Authority budget for $68 million. Chicago has a three-year program for airport improvement averaging over $40 million a year. It is obvious that the current budget is not adequate to meet even the currently planned improvements which are admittedly insufficient. A review of federal aid to airport appropriations and expenditures for the last 10 years shows the following:

FEDERAL AID TO AIRPORTS APPROPRIATIONS AND EXPENDITURES

Fiscal Year	(for grants) Appropriations	Expenditures
1950[1]	$ 36,500,000	$ 33,182,519
1951[1]	21,200,000	30,388,415
1952[1]	15,850,000	32,808,063
1953[1]	9,710,029	26,990,826
1954[1]	—	17,481,945
1955[1]	20,750,000	8,353,021
1956[2]	63,000,000	16,515,871
1957[2]	63,000,000	20,649,031
1958[2]	63,000,000	42,870,367
1959[2]	63,000,000	56,577,624
	$356,010,029	$285,817,717

1/ Cash appropriations 2/ Contract authority
Source: Airports Division

It is noted that average federal aid to airports over the past 10 years has been at a rate of $28½ million per year. This is approximately 10 per cent of the total projected cost to build Dulles airport. Contrast this with $3.223 billions* spent last year in the federal aid to highways program and the firm assurance given for billions of dollars—$26.6 billion spread over the fiscal years 1957-69—to build federal highways in the future.

We can complete 3,589 Miles of Four-Lane Highway and 184 Miles of Six Lanes or more (the equivalent of 71,336 miles of single lane construction) per year but it requires practically a national emergency to secure another 1,000 feet of concrete for a runway on an airport. When we can have a $4 billion road building program, 90 per cent federally financed, a $100 million airport aid bill does not appear unreasonable. We feel that if the record of federal aid to airports for the past 10 years is repeated in the next 10, we will fall farther an dfarther behind.

In addition to the foregoing specific financial requirements with respect to improving the airport itself, we have the additional matter of providing navigation, communication, and terminal area landing aids, the need for which was so graphically described by the 1960 accident record.

Some people have a tendency to be complacent about this very serious problem because appropriations in recent years for this purpose have been substantially in excess of those for past years. We believe that this is a very dangerous view. While appropriations in recent years have been of substantial improvement, we ask that you examine the record for the past 10 years and it will not be difficult to understand why we have fallen so far behind. The following shows the appropriations and expenditures for the establishment of

*(U. S. Department of Commerce—Highway Progress, 1959.)

air navigation facilities for the years 1950 through 1959:

EANF APPROPRIATIONS AND EXPENDITURES

Fiscal Year	1/	Appropriation for New York	Expenditures
1950	$ 8,000,000	$ 10,650,000	$ 18,337,390
1951	22,000,000	5,500,000	17,850,387
1952	12,000,000	10,500,000	18,670,845
1953	3,641,499	9,950,000	16,935,754
1954		7,000,000	12,044,982
1955		5,000,000	8,679,768
1956	7,000,000	16,000,000	9,702,951
1957		75,000,000	23,587,755
1958*		124,603,525	50,575,419
1959**		158,500,000	98,081,367
	$52,641,499	$422,703,525	$274,466,618

* Excludes $21,500,000 transferred from Air Force to FAA for VORTAC facilities.

** Excludes $16,500,000 transferred from Air Force to FAA for VORTAC facilities.
Of the A.F. funds transferred $1,046,695 was expended in 1958 and $4,107,251 in 1959 (not included in above totals).

1/ Liquidation of prior year contractural authority
Source: FAA Budget Office.
(EANF — Establishment of Air Navigation Facilities)

You will note that the average expenditure for the establishment of air-navigation facilities over the past 10 years has been $27 million per year. In our view, this demonstrates shocking neglect when you consider that the federal government has assumed the entire responsibility in this area and that 75 per cent (from March, 1959, **Le Monde Economique**) of the total revenue passenger miles flown in the entire world are flown by U. S. air carriers.

It is obvious that this Commmittee and the present session of Congress must immediately assume a reasonable financial burden if the responsibility which the federal government has assumed to provide adequate and safe aviation facilities is to be carried out.

Near miss and incident reporting

On pages 21 through 23 of our June 6, 1960, testimony before this Committee, we urged the restoration of an effective system of near-miss and incident reporting to facilitate the discovery and analysis of areas of potential hazards. We pointed out that we felt the enforcement philosophy and general behavior of the former Administrator had broken down important lines of communication. We refer you once again to this testimony and urge FAA and CAB to take the earliest possible steps to remedy this situation.

Amendments to the Federal Aviation Act

We would like to note the fact that this Committee and the Congress have made significant contributions toward the ultimate solutions to the problems with which we are dealing. For example, it is our view that the Federal Aviation Act of 1958, in whose development we participated, is basically a good law and removes many of the former impediments in the way of solutions to our important safety problems. We do, however, feel quite strongly, as we did at the time of its adoption, that certain basic errors were made in the statute which should be corrected in the light of experiences in order to provide the most effective law available.

Under the urgency with which we were confronted at the time the Federal Aviation Act was adopted, the Congress, in effect, delegated the legislative authority of Congress in aviation matters to one man. As we have testified previous and as most of this Committee is aware, under the present statute the Administrator is required only to give notice under the Administrative Procedures Act and is then free to adopt practically any rule he desires, no matter how arbitrary. Congress has truly created a one-man czar over the entire aviation industry and its personnel. If the particular Administrator happens to be arbitrary, naive or capricious, the people affected have no appeal except to the Congress or the federal courts. We were apprehensive of these facts during consideration of the Federal Aviation Act of 1958 and attempted to persuade the Congress to provide for an effective appeal from arbitrary rule-making. We were unsuccessful and our fears have since been realized.

During our appearance here on June 6, 1960, we presented a detailed description of this problem and we refer the Committee to pages 27 through 41 of that statement, which is attached, for a review of those examples which we feel merit consideration of an amendment to the law which will assure our constitutional rights of appeal from arbitrary action, as well as assist toward sounder decisions in our required rule-making.

We note that bills have been introduced in this Session, numbered S. 446 and S. 447, which would accomplish our purposes and we firmly support the objectives of that proposed legislation.

Summary

This appearance before the Committee is the third time within the period of 14 months that we have been provided the opportunity to comment on matters which affect the safety of air line operation. We are most appreciative of these opportunities and have made every effort to summarize our viewpoint on such matters. With the thought that it may be helpful to this Committee, and to summarize the highlights of our total testimony, we offer the following specific recommendations, most of which are repetitions of conclusions previously reported to you.

I. We believe that a major effort must be made to improve the airport and terminal area facilities of this country without further delay. This is a project of emergency proportions and must be approached vigorously or the safety and efficiency of our air transportation system will be severely handicapped. We have indicated in our testimony today the amount of federal funds which we deem necessary in order to approach the problem. In our opinion, the following projects are immediately necessary to move this program forward:

(Continued on page 20)

U.P.I. Photograph

***IMPROVED APPROACH CLEARANCE** and runway length would have prevented the destruction of this aircraft which hit a dike while landing.*

NORTH CENTRAL AIRLINES SELECTS FOUR "CREW OF THE YEAR"

North Central Airlines Photo

MINNEAPOLIS/ST. PAUL-BASED "CREW OF THE YEAR" receiving their certificates from North Central's president. (L. to r.) F/O Robert T. Kreuger, Joan Alexander, Hal N. Carr, Captain Duane E. Petit.

Metro News Photo

MADISON BASED "CREW" (above) F/O Richard H. Wagner, Patricia M. Sweet, and Captain Leland C. Molbreak (Left) F/O Daniel J. Pruss, Bette Ward, and Captain Charles W. Nason, Chicago-based crew.

DETROIT BASED "CREW OF THE YEAR" receiving their certificates from Hal N. Carr, North Central's president. (L. to r) F/O Ronald C. Kielty, Roberta Apitz, Hal N. Carr, and Captain Oak Mackey.

The four North Central Airlines crews received the "Crew of the Year" awards at a dinner in St. Paul on March 6th.

Presenting the awards was Hal N. Carr, North Central president. The 12 recipients included a captain, first officer and stewardess from the company's four bases at Minneapolis-St. Paul, Chicago, Detroit and Madison, Wis.

Capt. William P. Buhr, originator of the award, is chairman of the airline's MEC professional standards committee. "The goal of the annual award is to commend crew members who demonstrate excellence in performance of duty," he stated, "and it's significant that the winners are chosen by their fellow workers."

Selection is made by each domicile's professional standards committee, composed of a captain, reserve captain and first officer. A stewardess from each crew base is designated by the North Central master chairman to meet with the committee and assist in naming a winning stewardess.

"The committee screened personnel from each domicile for nominations," Buhr explained. " 'The Crew of the Year' was then chosen through a grading system based on ten standards."

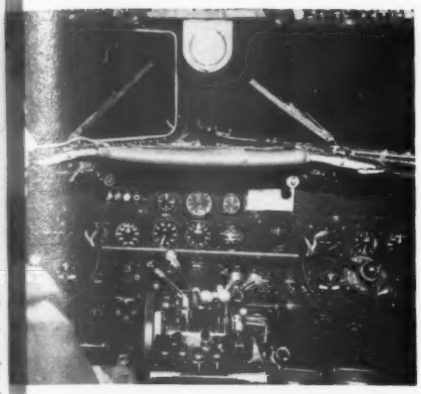
They are: appearance, professional bearing, personality, public contact, industry, cooperation, loyalty, initiative and conduct on and off the job. A total of from one to five points is allowed for each standard, 50 points representing a perfect score. Supervisory personnel are not eligible.

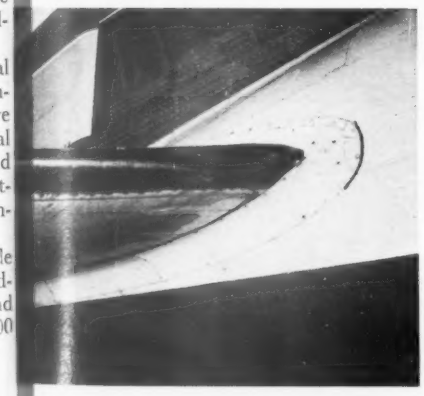
North Central flight crews include more than 300 pilots and 160 stewardesses. The airlines serves 10 states and two Canadian provinces over a 7,100 mile route system.

ALPA members attend OX5 pioneering meet

Dr. Herbert Fenwick of Chicago, ALPA flight surgeon, was one of 75 persons attending the membership meeting of the 0X5 Club of Illinois held March 18th at the Holiday Inn in Rockford. Another ALPA member who attended was Jack Schnaubelt of Chicago, a TWA captain who is now flying Convair 880 jets.

Club members include pilots who flew planes equipped with 0X5, an eight-cylinder, V-type, 90 horsepower water-cooled engine which powered many of the country's first commercial aircraft.





These photos show graphically the destructive effect of striking large birds at DC-3 speeds. Cockpit photo show how windshield was completely blasted out. The arrow in the photo at the bottom points to a glass splinter which punched through metal bulkhead behind the captain's seat.

ALPA Photograph

THE DANGERS OF STRIKING BIRDS

By W. K. HOWELL, Chairman

Detroit Area Safety Committee

ON October 17, 1960, a DC-3 was climbing through 6,500 feet MSL over Muskegon, Michigan. The captain was returning to the cockpit from the forward companionway where he had been adjusting the cabin heat controls. At that moment the first officer leaned over to check or adjust an instrument on the lower part of the panel.

A split second later the plane struck a flight of approximately eleven snow geese. The entire right windshield was smashed from the frame leaving only marginal fragments of glass and plastic. Pieces of birds and glass churned through the cockpit at a terrific rate. The captain received a deep cut over his right eye. The first officer's protective glasses were covered with blood and pieces of glass were so imbedded in and pieces of glass were so imbedded the lenses that he was unable to see.

In spite of his injury, the captain got back to the controls immediately. One chunk of glass struck the aluminum bulkhead behind the captain's seat with such force that it sliced through. *(See photograph.)* If he had been in his seat at the moment of the strike, he would have been severely if not fatally injured by the broken windshield fragment.

At least three, possibly four, geese came through the windshield. Two or three disintegrated, with blood, entrails and feathers splattered throughout the cockpit. Only one goose was relatively in one piece.

Much of the glass did pulverize; however, there were a number of chunks up to eight inches in diameter. (The ferry crew requested in the aircraft log that the cockpit be thoroughly vacuumed. Two days later crews were still writing up on "flying powdered glass.")

The captain immediately slowed the aircraft by lowering gear and flaps. The first officer contacted Muskegon Tower. The right side window was opened and this permitted much of the air to flow directly out of the airplane.

The flight landed at Muskegon and a Capital Airlines agent took the crew to a hospital that had been notified, although it was two hours from the time the flight terminated until a doctor started to examine them. (It is reasonable to expect this would not be uncommon at most airports; we need emergency telephone listings for medical aid.)

The Problem of Safety

We believe this a serious safety problem concerning all members. Since our last bird strike over Kalamazoo, we have heard of a number of strikes over various parts of the country. Because of a bird strike in September, a first officer temporarily lost the sight of his left

(Continued on page 14)

THE DANGERS . . .

eye, and at the time of this strike over Muskegon, he was still not flying. After the previous strike, most crews were wearing glasses or goggles for protection from flying glass in the event of a recurrence.

As with near misses, the FAA had a reporting program until 1955. Since then, to our knowledge, no safety action has been taken by the FAA. Yet, bird strikes continue. Maintenance record indicates at least one bird strike each year causing damage to the aircraft.

"Safety" Glass?

The windshield glass was manufactured to withstand the weight of a four pound bird at 200 mph. We do not know the test conditions or specifications. The glass is made up of a quarter-inch, fully-tempered outside panel which protrudes through the windshield frame, and the mounting surface consists of a .200 inch vinyl butyrate plastic backed by an eighth-inch panel of semi-tempered glass. The idea, evidently, is that the strength of the unit will withstand smaller bird strikes and in the event the glass does break, the vinyl is supposed to hold a bird. The inner glass is supposed to "powder" rather than shatter, so the pilots will not be cut by flying glass.

▶ The U. S. Fish and Wildlife Service has published a 10 page booklet, "Bird Hazard to Aircraft." It will be distributed through the FAA to airlines, airport owners and managers, aviation organizations and manufacturers. The publication urges clean-up efforts to discourage airport-area bird flocking. This includes elimination of dumps; destruction of weeds, reeds and brush which might provide roosting sites; and replacing berry or seed-producing shrubs with "less attractive" types.

▶ FAA's Atlantic City test center has been selected as the site for bird strike experiments. An $81,296 contract for construction of a compressed-air gun impact test unit has been awarded to R. A. Prendergast & Son of Atlantic City by the agency's Bureau of Research and Development. It is scheduled for completion next fall.

No one can answer how a complete windshield can be blasted past a crew member's head and neck without severe injury, or comment on the chances of the captain being out of his seat, or for that matter, why the two geese that were imbedded in the back side of the captain's instrument panel weren't flying with about 14 inches more altitude so as to wipe out the captain's windshield.

Anyone who has seen this damaged aircraft will assure you, *it was nothing short of a miracle* that both crew members were not killed if not incapacitated. One of the geese weighed over ten pounds and were Canadian honkers and snow geese.

Possible Remedies

There are a number of possible remedies for this situation; among them are:

▶ A metal rod grill work forward of the windshield.

▶ A heavy plastic inner-glass and frame to be attached inside the cockpit to prevent fragments of glass from coming through.

▶ A thicker, heavier, heated glass in a heavier frame.

To find an adequate remedy it usually takes a major effort on the part of a qualified person or persons. It is doubtful that a pilot representative is going to take this time, undergo flight pay loss and personal inconvenience in order to come up with positive recommendations. Those members who feel NESA glass—or what have you—is adequate protection against an eight to fifteen pound goose at present day plane speeds, may be flying with a false sense of security.

Supplementary Report

Captain Vernon N. Turner prepared a report on "bird control" ideas resulting from the accident to Flight 397, on October 17, which contains 10 precautionary suggestions and what to do in the event of a bird strike.

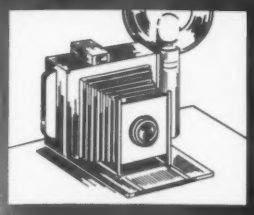
1. Protective eye-pieces whose lenses are of a clear and shatter-proof or safety type are an absolute "must." They should be of such design as to shut out exposure both from the sides and bottom of the lens. This is important not only at the time of contact but subsequently to exclude the fragments of glass circulating in the cockpit. Most of these glass particles are not even visible, but will continue to flow until the aircraft comes to a complete stop.

2. Wearing a "hard-hat" of the type used by construction workers—preferably the kind having a short visor and no extensions of the sides to restrict wearing a headset. Perhaps a sports car racing helmet could do this job better. **Then,** seated as low as possible in the cockpit, the unguided missile something either to penetrate or be diverted by and this possible chance of a glance-off could be the important factor. So protected, any concussion associated with this type of accident may well be weathered, whereas without such a head piece you can expect only the worst.

(Continued on page 20)

NEAR DISASTER. An Eastern Airline's employee looks into the engine of an EAL DC-8 that sucked in birds while on takeoff run at Logan International Airport last November. Parts of birds are visible on the rotor blades. ALPA's program for air safety calls attention to this serious problem.

U.P.I. Photograph



The ALPA Camera

Some Highlights and Sidelights of the News and ALPA in Pictures

United Air Lines Photo

UAL's NEW CARAVELLES, scheduled to go into service this summer, are currently undergoing FAA certification tests in France and is shown at the airport in Toulouse. Top speed is 530 at 25,000 ft.

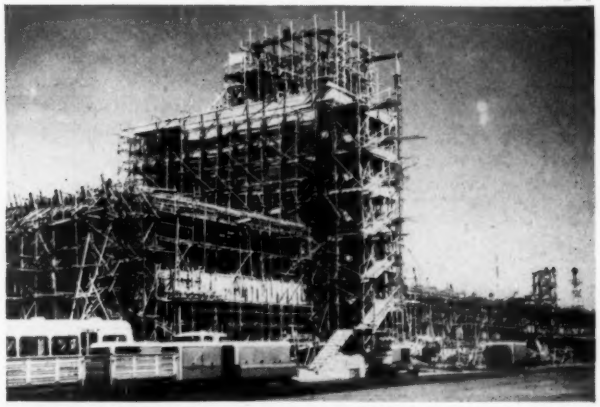
NEW AMERICAN AIRLINES' 707 "Astrojet" which cruises in excess of 600 mph and is powered by new fan-jet engines.

American Airlines Photo

Boeing Photograph

BOEING 720 JETLINER of the type Capital Airlines is now using on non-stop jet service between Miami, Cleveland and Pittsburgh.

U.P.I. Photograph



SEVEN STORY CONTROL TOWER at the International Airport, Bangkok, Thailand nearing completion. It will be ready in May with the latest ATC and communication equipment.

U.P.I. Photograph

A PRIVATELY OWNED turbo-prop Grumman Gulfstream collided with a single engine aircraft while making a landing approach at the Pompano Beach, Florida, airport. Two men in the smaller plane were killed.

Special Report:

PILOT TRAINING REQUIREMENTS

This report prepared by the ALPA Training Plans Committee was approved by the ALPA Board of Directors and represents current information on pilot air training requirements and qualifications for various aircraft.

By E. R. WATSON, EAL, Chairman, ALPA Pilot Training Plans Committee

THE ALPA Training Plans Committee submitted its report, November 16, 1960, to the Board of Directors in session at its 16th Biennial Meeting in Miami, Florida. As part of this report, the Training Plans Committee reviewed the amended Civil Air Regulations, effective January 1, 1961, affecting air carrier training programs. In addition, the Training Plans Committee reviewed the contents of FAA Circular Memo 59-72B dated September 7, 1960, concerning guide lines for FAA field personnel in evaluating training programs.

The Board of Directors unanimously approved the report and voted to continue the committee as a standing committee for the next two years. This represented in part a progress report since the Association's Training Plans Committee was formally created by the Board of Directors in 1956.

Research for Safety

On Thursday, November 17, 1960, Mr. W. A. Patterson, president of United Air Lines, told the ALPA Board of Directors, during a luncheon speech, that UAL would spend 11 million dollars during 1960 for safety research and operational training. Mr. Patterson said that "outside analysts" were appalled at this figure, but these same analysts will assume that air lines will lose two aircraft annually in accidents. The analysts cannot understand why such a sizeable sum should be spent to prevent this loss, despite the 5 to 6 million dollar cost of some new jets.

Reference to Mr. Patterson's speech is considered appropriate at the beginning of this report since United Air Lines has been a most progressive leader in the industry on operational crew training and safety research. The UAL training center at Denver has set high standards in air crew training. UAL has contributed much time and effort to the development of the use of the flight simulator and other training aids. The center's personnel are always eager to show visitors every detail of this training operation.

How Much Training Time?

Most ALPA members recognize the value of good practical training. There is, however, a wide span of opinion on how much training is necessary, especially when this training becomes a cost of doing business.

The answer to "how much?" has been supplied by FAA in a table attached to its Circular Memo 59-72B dated September 7, 1960. This table, reproduced in this article, has been thoroughly reviewed and discussed by the industry, including ATA, ALPA and FAA, during the past year. The minimum hours for initial upgrading and recurrent training shown on the chart are realistic times given by some carriers in the industry before the chart was compiled. Attempts to reduce the times have been made, but the pilot training has generally withstood dilution attempts.

Careful study of the Minimum Programmed Hours of Training Chart will give almost any U. S. air line pilot operating under CAR 40, 41 or 42 a complete picture of the number of hours of ground school, simulator and flight training to which he is entitled to initially qualify and maintain qualification on most types of aircraft now being operated.

These times, effective January 1, 1961, are considered minimum times by ALPA and FAA, but will most likely be considered maximum times by some carriers. Considerable improvement will have to be made in some programs to meet these minimums.

For example, a pilot in command or a pilot second in command operating under CAR parts 40, 41 or 42 who is initially checking out on DC-3 or C-46 should receive a minimum of 40 hours ground school. The pilot in command should receive a minimum of 8 hours flight training. The pilot second in command on a DC-3 or C-46 should receive a minimum of 4 hours flight training.

For recurrent training once each year, the DC-3 and C-46 pilots should receive a minimum of 12 hours ground school. The pilot in command should receive a minimum of 2.5 hours of recurrent flight training and the pilot second in command should receive a minimum of 1 hour flight training per year. The required proficiency checks are considered training flights.

A legend to the chart is also reproduced to offer more detailed explanation of the chart.

Third Pilot Requirements

The chart also provides training requirements for the third pilot aboard jet aircraft and provides for 120 hours of initial ground school training and 10 hours flight training for a third pilot on any of the three jets listed. Recur-

ALPA Photograph

Captain E. R. WATSON (right) receiving the ALPA Air Safety Award for 1960 along with Captain J. L. DeCelles of TWA (left) presented to them by ALPA President C. N. Sayen. Captain Watson has been Chairman of ALPA's Training Plans Committee since its creation by the 1956 Convention.

		A—GROUND SCHOOL						B—FLIGHT TRAINING[1]			TRAINER APPROVED SIMULATOR			D—LINK TRAINER[2]		E—INITIAL EQUIPMENT LINE CHECK				
		PC	2C	3P	NA	FA[2]	DS	PC	2C	3P	PC	2C	3P	PC	2C	PC	2C	3P	NA	DS FA
		40	40	40	40	40	40													
	1/T	40	40	—	—	8	16	8	4	—	—	—	—	6	4	10	10	—	—	X
	U	—	16	—	—	—	—	—	4	—	—	—	—	—	4	—	10	—	—	—
	R	12	12	—	—	3	8	2.5	1.0	—	—	—	—	6	6	—	—	—	—	—
	1/T	64	64	—	—	8	30	8	5	—	10	10	—	6	4	15	15	—	—	X
	U	—	32	—	—	—	—	—	5	—	—	10	—	—	4	—	10	—	—	—
	R	16	16	—	—	4	8	3	1.5	—	10[3]	10	—	6	6	—	—	—	—	—
	1/T	64	64	—	24	8	40	8	5	—	10	10	—	6	6	15	15	—	12	X
	U	—	32	—	—	—	—	—	5	—	—	10	—	—	4	—	15	—	—	—
	R	16	16	—	12	4	10	3	1.5	—	10[3]	10	—	6	6	—	—	—	—	—
	1/T	80	80	—	24	10	40	10	6	—	15	15	—	6	6	20	20	—	12	X
	U	—	40	—	—	—	—	—	6	—	—	15	—	—	4	—	20	—	—	—
	R	20	20	—	12	5	10	3	1.5	—	10[3]	10	—	6	6	—	—	—	—	—
	1/T	80	80	—	—	8	40	10	6	—	—	—	—	6	6	20	20	—	—	X
	U	—	40	—	—	—	—	—	6	—	—	—	—	—	4	—	20	—	—	—
	R	20	20	—	—	4	10	3	1.5	—	—	—	—	6	6	—	—	—	—	—
	1/T	80	80	—	—	10	60	10	6	—	10	10	—	6	6	25	25	—	—	X
	U	—	40	—	—	—	—	—	6	—	—	10	—	—	4	—	25	—	—	—
	R	20	20	—	—	5	20	3	1.5	—	—	—	—	6	6	—	—	—	—	—
	1/T	120	120	—	—	10	60	10	7	—	15	15	—	6	6	25	25	—	—	X
	U	—	60	—	—	—	—	—	7	—	—	15	—	—	4	—	25	—	—	—
	R	20	20	—	—	5	20	3	1.5	—	10[3]	10	—	6	6	—	—	—	—	—
	1/T	120	120	120	32	16	80	20	10	10	20	20	20	6	6	25	25	25	12	X
	U	—	60	75	—	—	—	—	10	10	—	15	15	—	4	—	15	15	—	—
	R	25	25	25	16	12	20	6	3	3	10[3]	10	10	6	6	—	—	—	—	—

[1] Basic (Indoctrination of New Hires).
[2] Link Time not required when equivalent training is given in an aircraft simulator.
[3] Minimum programmed time for approved aircraft simulator programs.
[4] Recurrent training required may be reduced for those air carriers having approved simulator programs.

The chart titled "Minimum Programmed Hours of Training" has been reproduced from the FAA Circular Memo 95-72B, Attachment C, dated September 7, 1960. The copy which follows is an explanation of symbols used on the chart and a more detailed explanation of certain items on the chart.

PC—Pilot-in-Command
2C—Second-in-Command (copilot)
3P—Third Pilot (where third pilot is assigned as a member of the flight crew—not as second-in-command as set forth in Civil Air Regulations 41.53K(b) and 42.44(3) (i).
NA—Navigator
FA—Flight Attendant
DS—Dispatcher
I/T—Basic or Transition Training
U—Upgrading Training
R—Recurrent Training
X—One Round Trip Over a Route Segment (total flight time not to be less than five hours).

NA—The designation "NA" (navigator) as used in this and other sections of this document, is intended to refer to a certificated and otherwise qualified airman of this category.

I/T—In those instances where a second-in-command is to be upgraded to pilot-in-command status in an aircraft type for which he has not been certified second-in-command or in which he not currently qualified, the requirements of "I/T" (transition training) all apply.

—As used in this attachment, the bol "U" (upgrading training) signi- the training which will be required upgrade a second-in-command to t-in-command status in an aircraft e for which he has been trained and tified and is currently qualified as ond-in-command.

—The minimum programmed times cified oppsite the symbol "R" (re- rent training) are the times required each aircraft in which the crew mem- maintains current qualification. is training can be accomplished by ans of proficiency checks, flight ining, or accomplished as part of an proved simulator training program.

Column B—The minimum programmed flight training time shown in Column B is that time required in the aircraft when simulator or procedural training is not provided.

When approved simulator training is provided and the programmed time is equivalent to that shown in Column C, the flight training time shown in Column B may be reduced by 25%.

When procedural trainers or aircraft simulators which have not been approved are used in air carrier training programs, it will be necessary that they be evaluated on an individual basis to determine the degree of simulation provided. Appropriate reduction in aircraft flight time requirements up to 25 percent may be allowed.

Column D—The initial equipment line check requirements listed in Column D are intended to represent the following:

A. With respect to a pilot-in-command the values shown represent the minimum time he must be observed by a qualified airman while performing the duties of pilot-in-command.

B. With respect to second-in-command, the values shown represent the minimum time which must be spent by the trainee in observing an actual operation prior to assignment as a flight crew member.

C. With respect to the dispatcher and flight attendant requirements, one round trip over a route segment (s) will suffice providing the flight time is at least five hours.

In order to assist in the application of the minimum programmed times set forth in this attachment, the following examples have been developed:

1. The minimum programmed times designated for each type aircraft were established under the concept that each flight crew member and dispatcher would be assigned to only one aircraft. In cases where these personnel are performing duties on one or more aircraft, adjustments can be made in the recurrent minimum programmed time.

As an example, pilots are required to have only six hours a year in the Link trainer or equivalent training device, regardless of the number of aircraft in which they are qualified.

2. The minimum programmed recurrent ground school hours for personnel were premised on individuals receiving recurrent training in broad objectives such as: regulations, weather and company policy in addition to the specific aircraft; therefore, for personnel holding dual qualifications, general subjects need not be repeated and recurrent training can be reduced to that required to cover the problems related to the specific aircraft.

3. In the application of flight simulators, it is intended that the reduction of 25 percent be applicable to initial training only, however, where an air carrier has an approved simulator course, this training may be substituted for required recurrent flight training.

4. In the case of recurrent flight training, the minimum time set forth for the pilot-in-command is premised on this pilot receiving two proficiency checks a year totaling three hours or one and one-half hours for each check (with the exception that jet type aircraft would require three hours per check or training period). The flight time established for the second-in-command is premised on his receiving one flight time check a year utilizing the crew concept. If a pilot holds qualifications in three aircraft, the following would apply: CV-340—one and one-half hours; DC-6—one and one-half hours; Lockheed Electra—one and one-half hours. Specifically, we expect the pilot-in-command to have a minimum of one hour and one-half recurrent flight training in each type aircraft (three hours in jet aircraft) whether it be a proficiency check, a training flight, or a training course. Utilizing this same concept for a second-in-command, we would expect the same flight times to apply utilizing the crew concept of proficiency checking and training; however if the second-in-command is given a proficiency check or training separately, the flight time required may be reduced to that necessary to cover the training and proficiency check maneuvers required for the second-in-command.

PILOT TRAINING . . .

(Continued from page 16)

rent training time of a minimum of 25 hours ground school per year is required for all three pilots aboard a B-707, DC-8, or CV-880. Recurrent minimum jet flight training per year is 6 hours for the pilot in command and 3 hours each for the pilot second in command and third pilot.

Additional reference and clarification of the third pilot is as listed on the chart and can be found in the first paragraph of the legend.

At the time this FAA operation information was published, the administration of Part 35 and the licensing and checking of flight engineers was delegated to the Maintenance Division of FAA. Therefore, a column of times for this flight deck crew member is conspicuous by its absence on the chart.

On October 28 and 29, 1960, FAA released information to the industry advising that administration and licensing and checking the operating crew member known as the flight engineer would be transferred from the Maintenance Division to the Operations Division, immediately. Minimum training times for the flight engineer would be the same initial ground school times designated by the chart for the pilot in command, with recurrent training time for the flight engineer the same as designated for the pilot second in command.

Time Limits for Regulations

The carriers now have specific minimum times to meet. The original FAA Circular Memo 59-72A concerning training guide lines was dated April 20, 1960. The latest FAA guide lines on training are contained in FAA Circular Memo 59-72B dated September 7, 1960.

The amended training regulations are clear. The FAA instructions to its field personnel as set forth in the above mentioned memos are specific and also clear.

The original draft release announcing the proposed CAR amendments to improve air carrier training was issued on June 25, 1959, or 18 months before the amendments were to have become effective. The industry was given a year from the time the CAR amendments were adopted (December 1, 1959) to the effective date, January 1, 1961. No doubt some problem will stem from the implementation of these amended Civil Air Regulations. Some ALPA members might be caught in the middle as FAA attempts to implement these minimum training times and some carriers attempt to delay or dilute the minimums.

Qualifying Maneuvers

To provide additional information on what the amended CAR will require during initial and recurrent flight instruction, the following condensation of required maneuvers is outlined:

AIR CARRIER TRAINING PROGRAM

I. Initial Pilot Flight Training.
Check out in new equipment or new hire training in each type.

A. *Pilot in Command* for ATR shall receive training and practice in the following:
1. Take-offs and landings day and night, including crosswind operation.
2. Normal and emergency flight maneuvers. Includes engine shutdown and restart, slow flight, stalls, canyon approach, etc.
3. V_1 cut of critical engine and V_2 climb-out at maximum T.O. weight.
4. Two-engine climb at maximum landing weight.
5. Three-engine missed approach in approach configuration at maximum landing weight.
Power settings can be reduced in lieu of maximum weight to simulate performance under Items 3, 4 and 5.
6. Traffic control procedures, including area departure, holding pattern entry, high and low altitude procedures.

B. *Pilot Second in Command* shall receive training and practice to include the following in *each type*.
1. Assigned flight duties as second in command, including flight emergencies.
2. Taxiing.
3. Take-offs and landings, day and night.
4. Take-off and landing with simulated engine failure.
5. Climbs and climbing turns.
6. Slow flight.
7. Approach to stall.
8. Engine shutdown and restart.
9. Conduct of flight under simulated instrument conditions, including instrument approach, at least down to circling approach minimums and missed approach procedures.

C. Pilots *other than* pilot in command or second in command.
40.282 (a) . . . "Shall demonstrate to a representative of the Administrator or to a check pilot, his ability to take off and land each type of airplane in which he is to serve."

The following paragraph appeared in the Federal Register of December 5, 1959, as part of the preamble to the amended training CAR 40.

"It is considered that pilots qualifying to serve on airplanes *other than* as pilot in command or as second in command should, in the interest of safety, be required to receive the flight training specified in 40.282 (a) and demonstrate their ability to take off and land each type of airplane in which they are to serve, in addition to accomplishing the other training requirements provided in 40.282 and 40.281. Accordingly such a requirement is prescribed in this regulation."

II. Proficiency Checks.
A. *Pilot in Command*:
Each six months ± a month from due date.
One a year may be taken in approved simulator.
Maneuvers same as ATR, except engine cut on T.O. may be given after V_1 and maximum gross T.O. need not be simulated
1. V_1 or after engine cut and V_2 climb out.
2. Two engine climb.
3. Three engine go-around in approach configuration.
4. "Flight maneuvers approved by the Administrator accomplished under the hood utilizing the navigation facilities and letdown procedures normally used by the pilot." Interpreted to mean holding patterns, ILS approach, and circling approach.

B. *Pilot Second in Command:*
Each twelve months ± a month from due date.
May be demonstrated from either the right or left pilot seat.
In evaluating the degree of proficiency displayed by the second in command, it is not expected that he attain the standards prescribed for the pilot-in-command.
(Same maneuvers as initial training.)
1. Taxiing.
2. Take-offs and landings.
3. Climbs and climbing turns.
4. Slow flight.
5. Approach to stall.
6. Engine shutdown and restart.
7. Take-off and landing with simulated engine failure.
8. Conduct of flight under simulated instrument conditions, including instrument approach at least down to circling approach minimums and missed-approach procedures.

Proficiency checks should be considered a training period as well as checking period, as indicated by the following information found in CAM 40:
"(y) Additional training. If performance of any of the above items is unsatisfactory in the judgment of the check pilot he may, at his discretion, give additional training to the pilot during the course of the proficiency check. If after such training, the pilot being checked is still unable to demonstrate satisfactory performance to the check pilot, he shall not be used in scheduled operation until such time as he shall have demonstrated proficiency.

(Published in 18 F.R 8682, December 24, 1953, effective January 1, 1954.)"

Unrealistic or Obsolete Training Maneuvers

1. Hood take-off. One hundred per cent instrument take-offs not permitted in actual practice. Some visual guidance needed for initial take-off roll and

(Continued on page 20)

UAL medical director receives company award

Dr. George J. Kidera, medical director of United Air Lines since 1951, is the recipient of the President's Award for 1960, which the company presents annually to an outstanding employee.

Dr. Kidera, current president of the Aerospace Medical Association, was chosen for the award in recognition of "long-time service by him and his staff to the well-being of United's flight personnel and other employees of the company."

He also was honored for "his valuable research and assistance in solving physiological problems related to air transportation." The award plaque was presented by W. A. Patterson, United's president.

Honor first pilot to fly across the U.S.A.

N. E. Halaby, Administrator of the Federal Aviation Agency, honored Calbraith Perry Rodgers, the pilot who, fifty years ago made the first airplane flight across the United States, on March 17.

Mr. Halaby designated the route of that first crossing of the nation by air as the Calbraith Perry Rodgers Skyway and signed a scroll which will be presented to his widow, Mrs. Mabel Rodgers-Wiggin at her home in Bridgeport, Connecticut.

Rodgers, an early aviation enthusiast, took 49 days and 68 stops to make his journey. In passing, Mr. Halaby noted that in 1945 it took him three stops and five and three-quarter hours to make the first transcontinental flight and the current record is nonstop.

Rodgers began the 4,251 mile trip at Hempshead Bay, New York, September 17, 1911, in a Burgess-Wright biplane christened "The Vin Fiz." He flew from New York down through Ohio, on to Chicago, south through Texas and finally landed November 5, 1911, at Pasadena, California.

In contrast with today's elaborate system of airways, the first pilot to cross the nation had no radio, no weather reporting, no traffic control, and only sketchy maps to assist him. Rodgers followed the "iron compass," or railroad tracks, as most of the early pilots did.

The Burgess-Wright biplane was damaged innumerable times during the trip and only the rudder and drip pan remained from the original aircraft at the end of the historic flight. This aircraft is now in the Smithsonian Air Museum, Washington, D. C.

United orders new type transponders for jets

Newly developed air traffic control transponders with the future capability for eventual operation in the "third dimension" of automatic altitude reporting have been ordered by United Air Lines from Radio Corporation of America.

Purchase of 51 units by United is the first order by a major scheduled domestic airline and follows completion of successful operational tests by the air line and RCA. The transponders are intended for United's Caravelle jets which will enter service this summer and for Boeing 720 jetliners to be delivered in 1962.

United will be prepared to add the altitude reporting feature to its AVQ-60-B transponders as soon as system standards are approved by the Federal Aviation Agency and at such a time as the FAA provides suitable ground receiving facilities.

INDUSTRY BRIEFS

New ILS for O'Hare

A third instrument landing system will be installed by September of 1961 at O'Hare airport making it the only U. S. airport with three ILS systems. At present, O'Hare has two parallel northwest-southeast ILS systems in operation. The new system will be built on the east-west jet runway.

Ask repeal of air tax

Repeal of the discriminatory excise taxes on passenger fares and communication services is the most urgent legislative issue in the transportation and communication field during the coming 1961 session of Congress, according to a poll conducted by the Transportation and Communication Department of the Chamber of Commerce of the United States. Some 450 transportation and communication executives who are members of the National Chamber replied to the poll.

FAA asks for comments

The FAA is presently proposing a rule which would scale down takeoff weights for turboprop as well as pure jet transports operating in slush, wet snow, or "standing water." The Agency has asked interested parties to submit their comments on the proposed rule no later than February 27.

Courtesy Trans-Canada Air Lines

"Electronic reservations system or not, we've one oversale who won't be satisfied punching a blown transistor in the nose!"

PILOT TRAINING . . .

acceleration. Precession of gyro compass during acceleration enough to take aircraft off runway.

2. V_1 engine cut while under the hood.

3. Low frequency range orientation and letdown. Should be retained only when some of a carrier's routes are still equipped primarily with low frequency four course ranges.

4. Second engine failure simulated after V_2 climb out. Some over-zealous instructors place the aircraft in a marginal control situation by simulating a second engine failure before a three-engine climb speed and configuration is reached. The possibilities of a second engine failure in this regime of flight are very remote, and in most cases the two engine minimum control speed is considerably higher than V_2 speed.

5. Combining maneuvers and creating a hurried unrealistic situation such as a V_2 engine cut and climb out followed by a second simulated engine failure on the downwind leg, the student is then expected to continue with a normal traffic pattern and approach with 50 per cent power available on one side. In an actual 50 per cent power loss situation most pilots would give themselves plenty of room and back off to make a longer, more shallow approach than usual to eliminate any possibilities of an over or undershoot, since a two-engine go-around is most impractical.

(Continued from page 18)

6. Pulling circuit breakers to inject unrealistic instrumentation failures not easily detected by power failure warning devices. Any trainee pilot who has a minimum amount of time in a new aircraft is already highly engrossed in concentrating on flying the aircraft. To expect the pilot on a rating ride to do a solo act and pick up flight instrumentation failures not properly flagged is unrealistic. It takes a minimum of two well qualified pilots to operate most present day transports.

Any pilot can be overloaded during a training or checking period. Maneuvers and operational situations should be kept realistic. *There should be a good operational training reason why a maneuver is performed or a situation is simulated.*

Each Council Chairman and Copilot Representative who attended the November, 1960, Board of Directors Meeting received a copy of the ALPA Training Plans Committee Report in which the above information appears. Any ALPA member who desires additional detailed information can either contact his Council Representatives or the Engineering and Air Safety Department in Chicago.

ALPA's statement

(Continued from page 11)

(a) Immediate decisions on standards for approach lighting and runway lighting.

(b) Immediate research and decision on standards for airport fire-fighting and rescue equipment.

(c) Immediate decision on standards for airport zoning and clearways along the lines recommended by the President's Airport Commission.

(d) Immediate steps to certificate airports in line with the report of the President's Airport Commission.

(e) Immediate installation of known aids to navigation, such as:

1. The establishment of control zones at all airports which are provided with instrument approach procedures.
2. The establishment of control towers at all air line airports.
3. The installation of standard approach lighting on all major instrument runways.
4. The installation of instrument landing systems on all major instrument runways.
5. Early installation of visual glide path equipment wherever necessary.

II. Expedite the implementation of the standard short-range navigational aids to replace older and less reliable aids with efficient equipment as soon as possible. At the same time, we must recognize the need for continued research and development of new and more revolutionary aids in order to keep abreast of the technological improvements taking place in our aircraft.

III. Expedite a program of direct communication between the pilot and air traffic controller and take all possible steps to reduce the cockpit communications workload.

IV. Initiate immediate rule-making that will provide the traveling public with a fail-safe flight crew, providing the same protection in the flight crew that is afforded in the other components of the aircraft. This problem was dealt with in detail during our testimony of January 18, 1960, which is in the Committee record.

V. Expedite research in every way for an airborne anti-collision device that will restore the "see and be seen" capabilities of the cockpit.

VI. Amend the Federal Aviation Act of 1958 so as to provide adequate review of the rule-making authority currently in the hands of the Administrator.

VII. Establish a comprehensive incident reporting program which will expose potential hazardous situations.

It is interesting to note, and we cannot urge this position too strongly, that in practically all areas the means of resolving the problems are available and have been available for some time. It is our sincere hope that this Congress, in the light of the known facts and past experience, will aggressively pursue solutions to these problems.

We also wish to assure you of our continued interest in the subject and our earnest desire to be of assistance wherever possible in providing the Committee with more detailed information which might be helpful in their deliberations on the specific legislation required.

Thank you for your consideration and the opportunity you have made available to us to express our viewpoint on a subject which so greatly affects all of us.

THE DANGERS . . .

(Continued from page 14)

3. REMEMBER: Open the side window to shut off part of the direct flow of air away from the exposed person. This open side window is, of course, most effective on the same side as the knocked-out windshield.

4. GEAR DOWN immediately, then flaps, to reduce airspeed to the lowest safe speed possible. In our case with grear and flaps down, our emergency descent was the "canyon type"; low speed, and permitting the letdown over the city and to the Muskegon airport which was practically beneath us at all times.

5. The nose section, instrument panel bulkhead, and instrument panel itself are the barriers that should be considered. These only are going to stop the big trouble maker, and the pilot should think in these terms rather than hoping a DC-3 windshield affords positive insurance. I suggest you become a "peeper" as long as you don't sacrifice the essential area to be viewed ahead. Then present as little of yourself as possible.

6. The time element may well be the break-even factor. When you realize

(Continued on page 25)

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LAMENT

Seniority is stuff that few pilots can boast of,
Something those at the top always make the most of.
They get all the gravy and leave us the plate
It is pretty slim pickings for us who came late.
We don't have a choice when it comes to priority,
We belong to what's known as "The Forgotten Majority."
We long for a little seniority.

Who is always up front on the T-bone trips?
The subject of most all the seniority Quips?
It is the guy that hired out a few years before
That is grabbing the cream, that is robbing the poor.
We, who came late for our magical date,
Find the taters all gone, only scraps on the plate.
Oh, for a little seniority.

I long for the dough the majority missed
By being too low on the seniority list.
While the guys at the top make all the big money,
Home all the time enjoying the honey,
We slaves farther down mostly live out of town
Flying whistle stop trips that are all up and down.
Oh, for a little seniority.

For year after year, for time no end
I play second fiddle to the "nine old men,"
Who grab the vacations, the non-stops and such,
And leave me the leavings, which usually ain't much.
I long to belong to that elite minority
Who enjoy all the blessings of having priority.
Oh, for a little seniority.

I won't be surprised, on that great judgment day,
If I knock on the gate and hear St. Peter say,
"I know that on earth there are things that you missed
Because of your place on the seniority list.
We try to accommodate all who come here
And do a good job of it year after year,
But we might as well face it and bear with a grin
It is down at the bottom you will have to begin.
We've got no more space, there is nothing to sell
You will have to take left-over space down in Hell."
I'll never get any seniority.

—*Captain J. R. Armstrong*

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AD 60092 (C) (2)

$1.1 billion required in next 4 years to improve airport safety

Building new airports needed in the United States, plus expansion and improvements necessary to enable existing airports to meet the rapid growth of modern air transportation and its rigid safety standards, will cost over $1.1 billion during the next four years, according to a joint survey just completed by the Airport Operators Council, the American Association of Airport Executives and the National Association of State Aviation Officials. *(An ALPA survey of airports was started in October, 1959, and certain of its findings were used by ALPA representatives at the Senate Aviation Subcommittee hearings, scheduled for February 27, 1961.—Editor.)*

The survey showed that the rapidly increasing demands of business aircraft and air line service into small and medium size communities, as well as those of jet liners into the larger metropolitan areas, creates a constantly increasing need for airport construction and improvements.

Those responsible for the development and operation of airports on a state and local basis have, through the three sponsoring organizations, made this comprehensive nationwide survey on a state-by-state and airport-by-airport basis. Their findings, released today, show that to complete this airport construction program an average of over $134 million will be needed annually during the next four years to augment the $588,065,224 which the state and local public agencies anticipate they will be able to raise.

The three organizations conducting the survey will join forces in presenting the findings of their survey to the Kennedy Administration and to the new Congress. They will specifically request an extension and expansion of the Federal Airport Act of 1946 to provide for the additional construction funds needed to supplement the local contribution to our national system of airports.

All of the Federal funds authorized under the present law, which expires June 30, 1961, were allocated during 1960. This law has provided for $63 million Federal grants-in-aid to local airport sponsors each year during the last several years, and provides for Federal participation in specific airport improvement projects up to 50 per cent of their cost. Actual Federal participation in total airport construction costs has been considerably less than 50 per cent, however, because of inadequate funds to meet the demands.

There are over 6,500 airports in the United States, of which approximately 3,500 are publicly owned. The survey of these publicly owned airports showed that nearly half of them are in need of immediate expansion and improvement. Included in those showing the greatest need are the 571 communities in the 48 Continental States and in Hawaii and an additional 242 cities, towns and villages in Alaska that are served by scheduled air lines.

The Airport Operators Council is a national association comprised of local public bodies which own and operate most of the Nation's principal airports. The American Association of Airport Executives is a national professional society of airport managers. The National Association of State Aviation Officials is an organization of State Aviation Commissioners and Directors.

Attention, Flight Personnel!

be an absentee businessman

...open a Philco-Bendix self-service laundry store

Many airline pilots, co-pilots, engineers and stewards are going into the self-service coin-operated laundry business. These new stores are made to order for absentee ownership and are hard to beat for fast returns on a small capital investment.

Here are some of the facts: A coin-operated laundry needs no attendant. Customers simply come into the store, wash and dry their clothes in metered machines and leave. Only a few hours a week are required to empty coin boxes and supervise efficient operation.

Coin stores are outstandingly successful because they offer customers up to a 65% saving over attended-type wash-and-dry service. They are convenient for busy people because they remain open 24 hours a day, seven days a week. There are no credit problems – *it's strictly a cash business.*

Act now! Send coupon below for complete data on business locations in your area and valuable help in all phases of planning, financing and promoting a coin-operated laundry store that will work for you round the calendar.

PHILCO BENDIX **COMMERCIAL LAUNDRY SALES**

Philco-Bendix Commercial Laundry Equipment brought to you by Philco Corporation

PHILCO CORPORATION
Commercial Laundry Adv. Dept. AP-12
Tioga and C Streets, Philadelphia 34, Pa.

Please send me information on Philco-Bendix Commercial Washers . . . also the name of my local distributor.

Name_____

Address_____

City_____ Zone____ State_____

THE DANGERS . . .

(Continued from page 20)

that should both pilots, as in our case, have head lacerations, the resulting bleeding along with the steady accumulation of glass particles, etc., will slowly but surely clog your vision. Here is where the side and bottom protection of the eyes takes on new importance. This factor became paramount because of the increased vision fogging as time went on, and from point of impact to landing was only eight minutes.

7. Each incident has its own characteristics. Only the degree of complexity will identify a particular accident. The separation between a functional crew or an effective part becomes a fine line after you have experienced some uninvited guests of the goose family entering your cockpit. I would encourage all pilots to prepare for this type of accident. Then you will have a fighting chance to deliver your passengers and other crew members.

8. 121.5 is the emergency frequency no pilot can forget, and the checklist is your "Ace in the Hole."

9. Without question, there must be two qualified pilots to handle this emergency. In my opinion, anything short of a proficient crew can only spell a "total."

10. Use of alcohol and wipers may help in clearing the grease-like film on the good windshield, but in our case we could not manage to get the fluid flowing and the wiper only spread the covering. You can land surprisingly easy utilizing only the side window.

Nothing in the above is intended to be absolute, just thought provoking ideas that should be explored and seriously considered so long as this number one safety hazard exists. Should you see an opportunity for any improvement, or some new idea or gadget that will do the job, notify your Air Safety Chairman or Air Safety Department, Home Office in hopes we can come up with the best possible protection. Then, should anyone be exposed, he will have the odds in his favor—right now they favor the snow and Canadian geese.

Capt. Vernon N. Turner

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WRITE FOR INFORMATION ON ALL TYPES OF ENGRAVED PLASTIC FOR AIRCRAFT AND INDUSTRIAL USE.

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This insurance will pay a pilot $25,000 cash, tax free, if he is permanently prevented from flying for his airline for physical reasons.

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- **If you have been employed more than 2 years, you may join by taking our physical examination from your company medical department or FAA examiner.**
- **If you decided not to join when first eligible, you must apply before age 36.**

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